

## CLAIMS

What is claimed is:

1. A method for providing a halftoned image comprising the step of:  
scaling the halftoned image by performing pel repetition utilizing an error diffusion algorithm such that artifacts are minimized.
2. The method of claim 1 wherein  $n \times m$  pel blocks of an image are scaled to  $(n+1) \times m$  pel blocks by inserting single pels in each block at locations distributed through the block according to the error-diffusion algorithm, with values chosen such that the average intensity of the block is substantially unchanged.
3. The method of claim 1 wherein no pel from a  $n \times m$  pel block is shifted more than one position from its neighboring pels in the scaled  $(n+1 \times m)$  block.
4. The method of claim 3 wherein the  $n \times m$  pel block is shifted by a shifting matrix.
5. The method of claim 2 wherein a threshold matrix is utilized to maintain the average intensity of a block.
6. A printing system for providing a halftoned image comprising:  
a storage device for providing a continuous tone (contone) image;

a spooler for receiving the contone image and converting the image to a halftoned image;

a scaler for scaling the halftoned image by performing pel repetition utilizing a error diffusion algorithm such that artifacts are minimized; and

a printer for receiving the halftoned image and printing the image.

7. The system of claim 6 wherein the scaler is within the printer.

8. The system of claim 6 wherein  $n \times m$  pel blocks of an image are scaled to  $n+1 \times m$  pel blocks by inserting single pels in each block at locations distributed through the block according to the error-diffusion algorithm, with values chosen such that the average intensity of the block is substantially unchanged.

9. The system of claim 6 wherein no pel from a  $n \times m$  pel block is shifted more than one position from its neighboring pels in the scaled  $(n+1 \times m)$  block.

10. The system of claim 9 wherein the  $n \times m$  pel block is shifted by a shifting matrix.

11. The system of claim 8 wherein a threshold matrix is utilized to maintain the average intensity of a block.

12. A computer readable medium containing program instructions for providing a halftoned image, the program instructions for:

scaling the halftoned image by performing pel repetition utilizing an error diffusion algorithm such that artifacts are minimized.

13. The computer readable medium of claim 12 wherein  $n \times m$  pel blocks of an image are scaled to  $(n+1) \times m$  pel blocks by inserting single pels in each block at locations distributed through the block according to the error-diffusion algorithm, with values chosen such that the average intensity of the block is substantially unchanged.

14. The computer readable medium of claim 12 wherein no pel from a  $n \times m$  pel block is shifted more than one position from its neighboring pels in the scaled  $(n+1 \times m)$  block.

15. The computer readable medium of claim 14 wherein the  $n \times m$  pel block is shifted by a shifting matrix.

16. The computer readable medium of claim 13 wherein a threshold matrix is utilized to maintain the average intensity of a block.